

CLAIMS

1. A recombinant *Dermatophagoides pteronyssinus* Der p 1 protein allergen derivative wherein said allergen derivative has a significantly reduced allergenic activity
5 compared to that the wild-type allergen in which said derivative has been genetically mutated and in which the mutant comprises the three following mutations: a mutation of the cysteine 71 residue, a mutation of the cysteine 103 residue and a mutation of the cysteine 117 residue.
2. A recombinant *Dermatophagoides pteronyssinus* Der p 1 protein allergen derivative
10 wherein said allergen derivative has a significantly reduced allergenic activity compared to that the wild-type allergen in which said derivative has been genetically mutated and in which the mutant comprises a deletion of amino acid residues 147 to 160 of Der p 1 or residues 227-140 of ProDer p 1.
3. A recombinant mutant allergen having any of the sequences selected from the group
15 consisting of:, SEQ ID NO: 15, SEQ ID NO: 17.
4. An isolated nucleic acid molecule encoding a mutated version of an allergen as claimed in any previous claim.
5. A nucleic acid sequence according to claim 4 wherein the codon usage pattern resembles that of highly expressed mammalian genes.
- 20 6. An expression vector containing a nucleic acid of claim 4 or 5.
7. A host cell transformed with a nucleic acid sequence of claim 4 or 5 or with a vector as claimed in claim 6.
8. An immunogenic composition comprising a recombinant protein or mutant allergen as claimed in any one of claims 1 to 3, or an encoding polynucleotide as claimed in
25 claim 4 to 7, and, optionally, an adjuvant.
9. An immunogenic composition as claimed in claim 8, wherein the adjuvant is a preferential stimulator of Th1-type immune responses.
10. An immunogenic composition as claimed in claim 8 or 9 wherein the adjuvant comprises one or more of 3D-MPL, QS21, a CpG oligonucleotide, a polyethylene
30 ether or ester or a combination of two or more of these adjuvants.
11. An immunogenic composition as claimed in any of claims 8 to 10 wherein the allergen is presented in an oil in water or a water in oil emulsion vehicle.

12. A immunogenic composition as claimed herein for use in medicine.
13. Use of a recombinant protein or mutant allergen as claimed in any one of claims 1 to 3 in the manufacture of a medicament for the treatment of allergy.
14. A method of treating a patient suffering from or preventing a patient susceptible to
5 allergic responses, comprising administering to said individual an immunogenic composition as claimed in claims 8 to 12.
15. A *Dermatophagoides pteronyssinus* ProDer p 3 or PreProDer p 3 protein allergen or derivative thereof, wherein said ProDer p 3, PreProDer p 3 or allergen derivative has a significantly reduced allergenic activity compared to Der p 3.
- 10 16. An allergen or derivative as claimed in claim 15, wherein said allergen or derivative has been thermally treated.
17. A allergen or derivative as claimed in claim 15, wherein said allergen or derivative has been genetically mutated.
18. A allergen or derivative as claimed in claim 17, wherein the mutation comprises a
15 mutation of a cysteine residue.
19. A recombinant allergen having the sequence of: SEQ ID NO:19.
20. An isolated nucleic acid molecule encoding a mutated version of an allergen as claimed in any previous claim
21. An isolated nucleic acid molecule having the sequence of any of SEQ ID NOs.20 or
20 21.
22. An expression vector containing a nucleic acid of claim 20 or 21.
23. A host cell transformed with a nucleic acid sequence of claim 20 or 21 or with a vector as claimed in claim 22.
24. An immunogenic composition comprising a recombinant protein or mutant allergen
25 as claimed in any one of claims 15 to 19, or an encoding polynucleotide as claimed in claim 20 to 21, and, optionally, an adjuvant.
25. An immunogenic composition as claimed in claim 24, wherein the adjuvant is a preferential stimulator of Th1-type immune responses.
26. An immunogenic composition as claimed in claim 24 or 25 wherein the adjuvant
30 comprises one or more of 3D-MPL, QS21, a CpG oligonucleotide, a polyethylene ether or ester or a combination of two or more of these adjuvants.

27. An immunogenic composition as claimed in any of claims 24 to 26 wherein the allergen is presented in an oil in water or a water in oil emulsion vehicle.
28. A immunogenic composition as claimed herein for use in medicine.
29. Use of a recombinant protein or mutant allergen as claimed in any one of claims 15 to
- 5 19 in the manufacture of a medicament for the treatment of allergy.
30. A method of treating a patient suffering from or preventing a patient susceptible to allergic responses, comprising administering to said individual an immunogenic composition as claimed in claims 24 to 28.